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JUN 11 2003

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Holland, et al.

Serial No.: 09/758,067

Confirmation No.: 7121

Filed: January 10, 2001

For: NONABRASIVE MEDIA WITH ACCELERATED
CHEMISTRY

Group Art Unit: 1763

Examiner: R. Culbert

Atty. Dkt. No.: 12350.0008.NPUS00

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RESPONSE TO FINAL OFFICE ACTION DATED MARCH 11, 2003

Commissioner for Patents
Washington, D.C. 20231

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Amy K. O'Farrell
Signature

INTRODUCTORY COMMENTS:

The following is in response to the Final Office Action dated March 11, 2003:

IN RESPONSE TO THE OFFICE ACTION:

ELECTION/RECTION

Claim 62 has been cancelled.

REJECTIONS

Claims 43 and 60 have been rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification. In view of this rejection, claims 43 and 60 have been cancelled.

Claims 35, 38, 41, 42, 56 and 58 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. As such, claims 35, 38, 56 and 58 have been cancelled, while claim 41 has been amended so as to overcome this rejection to claim 41 and claim 42 (which is dependent from claim 41).

Claims 22-44 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over the U.S. Patent No. 4,818,333 issued to Michaud et al. ("the '333 reference") in view of U.S. Patent No. 3,684,466 issued to Petrone ("the '466 reference").

A review of independent claim 22 shows that each of claims 22-44 require the use of a non-abrasive plastic media that can "can remove the blackmode from the surface of the metal article, thereby refining the surface of the metal article, after which the blackmode is immediately re-formed by the reaction between the metal article and the chemical solution for further refining by the non-abrasive plastic media." Claim 22.

The Examiner states that the '333 reference "discloses the method of the invention substantially as claimed, but does not show the use of a non-abrasive media made from plastic or from alumina bonded with an unsaturated polyester resin." Applicants respectfully assert that the Examiner is incorrect. While the '333 reference does disclose the use of non-abrasive media, it ONLY discloses the use of non-abrasive ceramic media. As is disclosed throughout the '333 disclosure, all of the media elements disclosed therein comprise the combination of aluminum and silicon oxides, the combination of which makes a ceramic media element. Ceramic media elements are much harder than the soft non-abrasive plastic and metal media elements as claimed here. The ceramic media of the '333 reference is not the same as plastic or metal media claimed

herein, and thus the '333 reference does not show the use of a non-abrasive media made from plastic OR a metal.

The '466 reference, does not add anything to the '333 reference that makes the combination sufficient to render obvious the currently pending claims. The use of non-abrasive media, plastic or metal, to "remove the blackmode from the surface of the metal article, thereby refining the surface of the metal article, after which the blackmode is immediately re-formed by the reaction between the metal article and the chemical solution for further refining" as claimed in both independent claims 22 and 45 is not disclosed in the '466 reference. Where combined references do not disclose or suggest all of the limitations of the claims, they are insufficient to render the claims unpatentable for obviousness. See MPEP § 2143.

The '466 reference simply discloses plastic "tumbling media" for use with an abrasive during a finishing process. The '466 reference discloses abrasive particles are mixed with a thermoplastic organic polymer to make the tumbling chips. Col. 3, ll. 3-10. This combination is not a non-abrasive plastic media element, as the tumbling chip comprises abrasive media, which, by definition from the '466 reference, "exhibits abrasive behavior toward the material to be barrel or vibratory finished, abrasiveness being a relative term requiring only that the so-called abrasive be of a harder substance than that which is being abraded." Col. 2, ll. 47-52. It is the abrasive elements disclosed in the '466 reference, that finish the surface of the element that is being finished. In another embodiment, the "tumbling media" do not comprise abrasive elements, but they are mixed with loose abrasive granules during the finishing step. Col. 3, ll. 39-45. Again, it is necessary to add loose abrasive granules to the mixture, as the "tumbling media" of the '466 patent would then not be able to abrade the surface of the element that is being finished. In NO embodiment of the '466 reference is it disclosed that the "tumbling media" are capable of finishing a metal article by themselves. An abrasive must always be present. Examples 1 through 5 all contain abrasives (silicon carbide, aluminum oxide chips, quartz and aluminum oxide chips, quartz and aluminum oxide chips, and quartz, respectively).

Again, the '466 reference does not disclose the use of a "tumbling chip" alone for superfinishing the surface of a metal article.

Conversely, claim 22 of the present invention clearly states that it is the non-abrasive plastic media that superfinishes the surface of the metal article by removing the blackmode, allowing the blackmode to reform, and removing it again. No abrasive particles, introduced separately or as part of the non-abrasive media element, are claimed or necessary for this invention. One of skill in the art reading the '333 reference in view of the '466 reference, would at best think it necessary to combine abrasive particles with the '466 reference tumbling chips in the '333 reference process. This is not what is claimed in the instant application, and therefore Applicants respectfully assert that the instant claims be allowed as written.

Even if the '466 reference did teach the use of plastic media that are used alone to superfinish a metal article, the '333 reference teaches away from using the plastic media claimed in the present invention. A necessary prerequisite for an obviousness rejection is that in one of the combined references there is a suggestion or motivation to one ordinarily skilled in the art to combine the two references. See MPEP § 2143.01. In this case, no such motivation or suggestion is present. In fact, not only does the '333 reference only disclose the use of non-abrasive ceramic media, it teaches away from the use of plastic media. The '333 reference requires that the media disclosed therein have a density of "at least about 2.75 grams per cubic centimeter (g./cc)" to be an effective media. '333 reference col. 2, ll. 45-46. As is clearly stated in the instant application, plastic media has a density of around 1.8 g/cc, well below the MINIMUM value set forth in the '333 reference. Because the '333 reference teaches that the media used therein must have a minimum density far above that of the plastic media used in the present invention, it therefore teaches away from using plastic media with the process disclosed in the '333 reference, rendering the combination of the '333 reference with the '466 reference insufficient to reject claims 22-44 as being obvious. See *In re Gurley*, 27 F.3d 551, 31 U.S.P.Q.2d (BNA) 1130, 1132 (Fed. Cir. 1994) ("[A] reference teaches away if it leaves the impression that the product would not have the property sought by the applicant.").

Finally, the Applicants respectfully assert that the examiner is mistaken that the '466 reference discloses the use of a media made from alumina bonded with an unsaturated polyester resin. The alumina of the '466 patent are highly abrasive particles which are used for removing significant amounts of metal stock. This alumina is embedded in the plastic or ceramic matrix to

form grinding wheels or abrasive media. The abrasive particles have sharp cutting edges, and are the tools that cut off the metal in the vibratory finishing process. In the '466 reference, the plastic, ceramic or metal media on their own do not produce any cutting action, but rather provide the force to drive the abrasive particles against the part.

Conversely, in the present invention, it is calcined alumina that is bonded with an unsaturated polyester resin to form the plastic media of the present invention. The properties of calcined alumina are much different than that of hard alumina based ceramics as described in the '333 reference or aluminum oxide crystals used as a coarse abrasive as described in the '466 reference. Calcined alumina is embedded in the plastic media described in the instant application. On its own, it provides an insignificant amount of metal stock removal, and only provides a polishing effect. Therefore, the term "alumina bonded with an unsaturated polyester resin" takes on a completely different meaning in the instant application, and once again the plastic media of the present is completely different from that of the '466 reference.

Regarding the rejections to dependent claims 32, 33, 40, and 39, applicant respectfully asserts that those rejections are now moot in light of the above arguments.

Claims 45-61 have been rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over the '333 reference in view of U.S. Patent No. 4,307,544 issued to Balz ("the '544 reference").

A review of independent claim 45 shows that each of claims 45-61 require the use of a non-abrasive metal media that can "can remove the blackmode from the surface of the metal article, thereby refining the surface of the metal article, after which the blackmode is immediately re-formed by the reaction between the metal article and the chemical solution for further refining by the non-abrasive metal media." Claim 45.

A necessary prerequisite for an obviousness rejection is that in one of the combined references there is a suggestion or motivation to one ordinarily skilled in the art to combine the two references. See MPEP § 2143.01. In this case, no such motivation or suggestion is present. In fact, not only does the '333 reference only disclose the use of non-abrasive ceramic media, it even teaches away from the use of metal media, stating that "the use of metallic media elements may be unsuitable for use in the present process" because an undesirable and substantial "ripple"

or "orange peel" effect was produced on the finished article after being treated with the metal media (i.e. steel balls). Col. 6, ll. 21-34. Because the '333 reference teaches that the use of metal media gives an undesirable result, it therefore teaches away from using metal media with the process disclosed in the '333 reference, rendering the combination of the '333 reference with the '544 reference insufficient to reject claims 45-61 as being obvious. *See In re Gurley*, 27 F.3d 551, 31 U.S.P.Q.2d (BNA) 1130, 1132 (Fed. Cir. 1994) ("[A] reference teaches away if it leaves the impression that the product would not have the property sought by the applicant.").

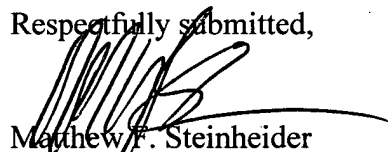
Regarding the rejections to dependent claims 53, 59, and 54, applicant respectfully asserts that those rejections are now moot in light of the above arguments.

The undersigned representative requests any extension of time that may be deemed necessary to further the prosecution of this application.

The undersigned representative authorizes the Commissioner to charge any additional fees under 37 C.F.R. 1.16 or 1.17 that may be required, or credit any overpayment, to Deposit Account No. 01-2508, referencing Order No. 12350.0008.NPUS00.

In order to facilitate the resolution of any issues or questions presented by this paper, the Examiner should directly contact the undersigned by phone to further the discussion.

Respectfully submitted,


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Date: 6/11/03